

REMARKS

In the Official Action mailed on **14 July 2008**, the Examiner reviewed claims 1-39. Examiner rejected claims 1, 8, 12, and 13 because of informalities. Examiner rejected claims 22-34 under 35 U.S.C. § 102(e) based on Pettey et al (U.S. Patent No. 6,594,712, hereinafter “Pettey”). Examiner rejected claims 1, 3, 10 and 12-19 under 35 U.S.C. § 103(a) based on Kagan et al. (U.S. Patent No. 7,013,419, hereinafter “Kagan”), and Gasbarro et al. (U.S. Pub. No. 2002/0141424, hereinafter “Gasbarro”). Examiner rejected claims 2 and 11 under 35 U.S.C. § 103(a) based on Kagan, Gasbarro, and further in view of the InfiniBand Architecture Specification 1.0 (hereinafter “InfiniBand”). Examiner rejected claims 4-6 and 20 under 35 U.S.C. § 103(a) based on Kagan, Gasbarro, and Kagan (U.S. Pub. No. 2002/0165899, hereinafter “Kagan-B”). Examiner rejected claims 7-9 under 35 U.S.C. § 103(a) based on Kagan, Gasbarro, and Pettey. Examiner rejected claim 21 under 35 U.S.C. § 103(a) based on Kagan, Gasbarro, Kagan-B, and Pettey. Examiner rejected claims 35-39 under 35 U.S.C. § 103(a) based on Pettey and Gasbarro.

Claim Objections

Examiner objected claims 1, 8, 12, and 13 because of informality. Applicant has amended claims 1, 12, and 13 based on the Examiner’s suggestion. Claim 8 remains unchanged. No new matter has been added.

Rejections under 35 U.S.C. § 102(e) and 103(a)

Examiner rejected independent claim 22 under 35 U.S.C. § 102(e) as being anticipated by Pettey. Examiner rejected independent claims 1, 12, and 13 under 35 U.S.C. § 103(a) as being unpatentable over Kagan, in view of Gasbarro. Examiner rejected independent claim under 35 U.S.C. § 103(a) as being unpatentable over Pettey, in view of Gasbarro. Applicant respectfully disagrees.

Neither Kagan, nor Petty, nor Gasbarro, alone or in concert, disclose an entry in a linked list that includes a first sequence number corresponding to a first expected response to a remote direct memory access (RDMA) Read request and a last sequence number corresponding to a last expected response to the RDMA Read request.

In embodiments of the present invention, responses to an RDMA read operation are tracked in the channel adapter that issues the RDMA read operation using a linked list (see instant application, page 44). Each entry in the linked list corresponds to a single RDMA Read operation, and each entry includes a first packet sequence number (PSN) for a first expected RDMA Read response and a last PSN for a last expected RDMA Read response, and/or the PSN of the most recently received response, and/or a link to the next entry in the linked list (see instant application, pages 45-47). By keeping track of PSN range of the RDMA Read responses, the system can determine if the PSN is out of order, or if the last expected RDMA Read response has been received. If the PSN is out of order, the transmit module retries the operation. If the last RDMA Read response has been received, the transmit module can retire a retry queue entry corresponding to the RDMA Read.

Applicant respectfully points out that neither Petty, nor Kagan, nor Gasbarro disclose maintaining a linked list for RDMA read operations where each entry in the linked includes a first PSN for a first expected RDMA Read response and a last PSN for a last expected RDMA Read response.

Examiner acknowledges that Kagan does not disclose first and last sequence numbers (see Office Action, page 6, 2nd to the last paragraph) and further acknowledges that Petty does not disclose first and last sequence numbers (see Office Action, page 20, 2nd to the last paragraph). However, Examiner avers that Gasbarro discloses a first sequence number and a last sequence number that identify a range of sequence numbers associated with expected responses to said

first RDMA Read request (see Office Action, page 8, last paragraph, and page 20, last paragraph).

Applicant respectfully points out that the text cited by the Examiner, namely paragraph [0089] and FIG. 11 of Gasbarro, does not disclose a first sequence number for a first expected RDMA Read response and a last sequence number for a last expected RDMA Read response. FIG. 11 of Gasbarro instead illustrates an example work queue element (WQE) ring with relative positions of pointers used to calculate the starting address of a WQE (see Gasbarro, par. [0089]). A WQE is different from a RDMA Read response. An RDMA Read response conveys a portion of communication in response to the RDMA Read request, and is assigned a packet sequence number. For an RDMA Read request, multiple responses may exist each having a different packet sequence number (see instant application, page 47). In contrast, in describing the WQE, Gasbarro describes data movement operation and location of data to be moved for processing and/or transportation (see Gasbarro, par. [0040]). Although Gasbarro mentions a packet header may include a packet sequence number field that can be used to detect a missing or duplicated packet (see Gasbarro, FIG. 3B and par. [0036]), Gasbarro does not disclose keeping a linked list whose entry comprises a first sequence number for a first expected RDMA Read response and a last sequence number for a last expected RDMA Read response.

Accordingly, Applicant has amended claims 1, 12, 13, 22, and 35 to clarify that the entry in the linked list comprises a first sequence number corresponding to a first expected response to the RDMA Read request and a last sequence number corresponding to a last expected response to the RDMA Read request. These amendments find support in pages 45-47 and FIG. 11 of the instant application. No new matter has been added.

Hence, Applicant respectfully submits that independent claims 1, 12, 13, 22, and 35 as presently amended are in condition for allowance. Applicant also submits that claims 2-11, which depend upon claim 1, claims 14-21, which

depend upon claim 13, claims 23-34, which depend upon claim 22, and claims 36-39, which depend upon claim 35, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

CONCLUSION

It is submitted that the application is presently in form for allowance.
Such action is respectfully requested.

Respectfully submitted,

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